

original Information Disclosure Statements, and, therefore, no additional copies of the references are submitted herewith. Applicants will be pleased to provide additional copies of the references upon the Examiner's request if it proves difficult to locate the original references.

The Rejection Under 35 U.S.C. § 103, Should Be Withdrawn

Claims 1, 2, 24, and 25 have been rejected under 35 U.S.C. § 103(a) on the grounds that they are unpatentable over NCBI Accession No. AJ222589 in view of Ikejima *et al.* (1990) *J. Biol. Chem.* 265:21907-13. The rejection is respectfully traversed for the reasons described below.

NCBI Accession No. AJ222589 discloses a nucleotide sequence that has approximately 97% sequence identity with the nucleotide sequence set forth in SEQ ID NO:1 and encodes a protein having approximately 95% sequence identity with the amino acid sequence set forth in SEQ ID NO:2. The protein encoded by NCBI Accession No. AJ222589 lacks amino acids 54-64 of SEQ ID NO:2. Amino acids 54 and 55 of SEQ ID NO:2 lie within one of the two zinc finger domains found in this protein.

Ikejima *et al.* (1990) *J. Biol. Chem.* 265:21907-13 teach that variants of human poly(ADP-ribose) polymerase that lack one of the two zinc fingers found in wild type human poly(ADP-ribose) lack enzymatic activity.

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In *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991), the Federal Circuit held that:

Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed compositions or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making and carrying out, those of ordinary skill would have a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be found in the prior art, not in the applicant's disclosure.

*In re Vaeck* at 1442, citing *In re Dow Chemical Co.*, 5 USPQ2d 1459, 1531 (Fed. Cir. 1988). Furthermore, to establish *prima facie* obviousness of a claimed invention, all of the claim

limitations must be taught or suggested by the prior art. *Manual of Patent Examining Procedure* § 2143.03 (8<sup>th</sup> ed.), citing *In re Royka*, 180 USPQ 580 (CCPA 1974). In the present case, no *prima facie* case of obviousness has been established for the invention of claims 1, 2, 24, and 25 because (1) the cited references cannot be combined to teach or suggest all of the claim limitations of claims 1 and 2; and (2) there is no suggestion in the prior art to combine the cited references to produce the invention of claims 24 and 25.

As described above, the amino acid sequence encoded by NCBI Accession No. AJ222589 lacks eleven amino acids of the amino acid sequence set forth in SEQ ID NO:2. This reference does not teach or suggest that the eleven amino acids set forth as amino acids 54-64 of SEQ ID NO:2 should be inserted within the encoded protein. Ikejima *et al.* does not provide the information missing from the NCBI Accession No. AJ222589 gene report, because this reference also does not teach or suggest the insertion of these eleven amino acids within the amino acid sequence encoded by AJ222589. Accordingly, the combination of the two references does not teach or suggest all of the limitations of claims 1 and 2, which specifically recite DNA molecules comprising a nucleotide sequence encoding the amino acid sequence set forth in SEQ ID NO:2, the nucleotide sequence set forth in SEQ ID NO:1, or a nucleotide sequence that is antisense to the full-length nucleotide sequence set forth in SEQ ID NO:1.

The facts of the present case are analogous to those found in *In re Deuel* 34 USPQ2d 1210 (Fed. Cir. 1995). In *Deuel*, the USPTO had rejected claims directed to cDNA molecules encoding heparin-binding growth factor (HBGF) as obvious over a reference teaching a partial protein sequence for HBGF and a reference teaching methods of gene cloning. The Federal Circuit reversed the rejection, holding that where an applicant teaches a new chemical entity, "a *prima facie* case of unpatentability requires that the teachings of the prior art suggest the *claimed compounds* to a person of ordinary skill in the art." *Id.* at 1214, *emphasis original*. The court further held that no one particular DNA can be obvious "unless there is something in the prior art to lead to the particular DNA and indicate that it should be prepared." *Id.* at 1215.

In the present case, the combination of the cited references does not teach or suggest the nucleotide sequence of SEQ ID NO:1 or a nucleotide sequence encoding SEQ ID NO:2. There

is absolutely no suggestion in either of these references to modify the nucleotide sequence of NCBI Accession No. AJ222589 to produce a nucleic acid molecule comprising the nucleotide sequence set forth in SEQ ID NO:1 or that a nucleotide sequence encoding the amino acid sequence set forth in SEQ ID NO:2 should be prepared. Accordingly, the requirements for a *prima facie* case of unpatentability for claims 1 and 2 have not been met.

Furthermore, the references cited in the Office Action do not establish a *prima facie* case of obviousness for claims 24 and 25, because the references do not provide a motivation or suggestion to those of ordinary skill in the art to modify the nucleotide sequence disclosed in NCBI Accession No. AJ222589 to produce a nucleotide sequence encoding a polypeptide having at least two functional zinc fingers. As noted above, the suggestion to combine the references to make the claimed invention must be found in the prior art, not in the applicant's disclosure. Furthermore, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *Manual of Patent Examining Procedure* § 2143.01 (8th ed.), citing *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990).

The gene report for NCBI Accession No. AJ222589 does not teach or suggest that the protein encoded by this nucleotide sequence contains a non-functional zinc finger domain, or that the disclosed nucleotide sequence could be modified to encode a protein having two functional zinc fingers. Ikejima *et al.* teach that two functional zinc fingers are required for the enzymatic activity of human poly(ADP-ribose) polymerase, but do not teach or suggest the desirability of modifying other poly(ADP-ribose) polymerase-related proteins to produce at least two functional zinc fingers. Thus, taken together, these references provide no suggestion to one of skill in the art that it would be desirable to modify the maize sequence disclosed in AJ222589 such that it encoded a protein having two functional zinc fingers. It is the Applicants' disclosure of the amino acid sequence set forth in SEQ ID NO:2, rather than the prior art, that provides the motivation to make such a modification.

35 U.S.C. § 103(a) provides that claims must not be rejected for obviousness unless "the differences between the subject matter sought to be patented and the prior art are such that the

subject matter as a whole would have been obvious at the time that the invention was made." At the time the present invention was made, the prior art did not provide a motivation to modify the nucleotide sequence of NCBI Accession No. AJ222589 to encode a protein having two functional zinc fingers. Accordingly, the requirements for a *prima facie* case of obviousness have not been met for claims 24 and 25.

Claims 1-15, and 17-33 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over NCBI Accession No. AJ222589 and Ikejima *et al.* as applied to claims 1, 2, 24, and 25, and in further view of WO 97/06267. The rejection is respectfully traversed for the reasons described below.

WO 97/06267 teaches a method of producing transgenic plant cells, comprising the steps of culturing untransformed cells with an inhibitor of poly(ADP-ribose) polymerase activity for a period of time sufficient to reduce the response of the cultured cells to stress and reduce their metabolism, and then contacting the cells with a foreign DNA of interest. This international patent application demonstrates that pre-treatment of the untransformed cells with inhibitors of poly(ADP-ribose)polymerase increases transformation efficiency. The Examiner argues that in view of the disclosure of WO 97/06267, it would be obvious to modify the sequence of NCBI Accession No. AJ222589 to produce a sequence having two functional zinc fingers, and then use this sequence to modulate plant metabolism.

The combination of references cited in the Office Action does not establish a *prima facie* case of obviousness for the compositions and methods of claims 1-15 and 17-33. As described above, the DNA molecules of claims 1, 2, 24, and 25 are not obvious in view of NCBI Accession No. AJ222589 and Ikejima *et al.* Therefore, the DNA constructs, transformed plant cells, transformed plants, and seeds containing these non-obvious DNA molecules as recited in claims 3-15, 17-20, and 26-32, and the methods of using these non-obvious DNA molecules as recited in claims 21-23 and 33 are necessarily non-obvious. Because there was no suggestion or motivation to one of ordinary skill in the art to prepare the nucleic acid molecules recited claims 1, 2, 24, and 25, there could be no motivation or suggestion to use these nonobvious DNA

molecules to produce DNA constructs, transformed plant cells, transformed plants, and seeds, and no motivation or suggestion to use the nonobvious DNA molecules in a method of modulating the metabolic state of a plant cell.

In view of the above arguments, all grounds for rejection under 35 U.S.C. § 103 have been overcome. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

### CONCLUSION

It is believed that all the rejections have been obviated or overcome and the claims are in conditions for allowance. Early notice to this effect is solicited. If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject Application, the Examiner is invited to call the undersigned.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Box Non-Fee Amendment, Commissioner for Patents, Washington, DC 20231, on December 11, 2002.

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